

CLAIMS

What is claimed is:

1. A continuous molding process comprising the steps of delivering a ratioed
5 mass weight of each of sand, cement, water, and pigment per unit time from raw material
supplying portions to raw materials accepting portions to a mixing portion of a molding
apparatus; mixing said sand, cement, water, and pigment in the mixing portion and delivering
the resulting mixture via a delivery portion where additional mass flow continuous mixing
takes place to a molding portion having a supporting portion and an indexing portion; and
10 molding said mixture with compression along one axis, in both positive and negative
directions thereof, said raw material accepting portion comprising a feed chute; said mixing
portion comprising an elongated chamber and means for mixing; and said molding portion
comprising a chamber formed by a supporting portion and faces of two opposed ram
assemblies having a face at one end and a cylinder assembly generating advancing and
15 retracting movement at the other end.
2. The continuous molding process of claim 1, wherein the feed chute is
continuously charged.
3. The continuous molding process of claim 1, wherein the charging chamber
functions as a measuring and shaping device prior to the compressing function when the front
20 and rear rams are in the charging position.
4. The continuous molding process of claim 1, wherein the solid top of the rear
ram functions as a shutoff valve at the bottom of the feed chute as it progresses from the
charge chamber into the mold chamber.

5. The continuous molding process according to claim 1, wherein the rear ram delivers the charging material, once compressed into brick, to an indexing receiver plate.

6. The continuous molding process according to claim 1, wherein the indexing receiver plate travels perpendicularly across the open gap between the front and rear ram.

5 7. The continuous molding process according to claim 1, wherein the indexing brick or paver receiver plate is positioned perpendicularly, between the front and rear ram faces, to multiple parallel molding units.

8. The continuous molding process according to claim 1, wherein the indexing brick or paver receiver plate is positioned perpendicularly, between the front and rear ram
10 faces, to multiple parallel molding units spaced 30 inches apart on center.

9. The continuous molding process according to claim 1, wherein the rear ram and front ram and supporting frame form the configuration of a triangle, square, or other design when fully compressing the charging material.

10. A process for making brick and brick paver, consisting essentially of the steps
15 of:

(a) delivering a ratioed mass weight of each of sand, cement, water, and pigment per unit time from raw materials supplying portions to raw materials accepting portions to a mixing portion of a molding apparatus;

(b) mixing said sand, cement, water, and pigment in the mixing portion
20 and delivering the resulting mixture via a delivery portion where additional continuous mixing of the mix takes place to a molding portion having a supporting portion and an indexing portion; and

(c) molding said mixture with compression along one axis, in both positive and negative directions thereof,

said raw material supplying portion comprising a feed chute; said mixing portion comprising an elongated chamber and means for mixing; said delivery portion comprising a charge
5 chamber, and said molding portion comprising a chamber formed by a supporting portion and faces of two opposed ram assemblies having a face at one end and a cylinder assembly generating advancing and retracting movement at the other end; the frame having an indexing plate, a pair of reciprocal ram heads, each driven by a separate dual-action hydraulic cylinder having an internal piston, and a charge chamber having a flat bottom and fed by a feed chute;
10 said pair of ram heads comprising a front ram and a rear ram that move in concert along the flat bottom of said charge chamber, thereby causing the measurement of the correct amount of charge and its positioning into a mold chamber formed by the selective alignment of said ram heads, said flat bottom of said feed chute, and said frame; said rear ram having a solid flat upper surface for sealing off additional charge in said feed chute; said front and rear rams
15 being selectively moveable and stoppable at the right side of said mold chamber, and reversible to appropriate distances and across said indexing plate to home positions, for compressing said charge into an appropriately sized brick or paver, pushing said brick onto said indexing plate, immediately retracting into said mold chamber, and pausing to allow indexing plate to index and receive another brick, and further retracting to its starting position,
20 wherein the moisture content in the mix is from approximately 10% to 30% of sample volume and no steam curing or firing is required after formation of the brick in order for the brick to meet or exceed ASTM and building code requirements for fired clay face brick.

11. The process of claim 10, wherein the moisture content in the mix is from approximately 8.5% to 10.5% of sample weight.

12. The process of claim 10, wherein the percentage of sand in the total mix is between 50 and 75 percent; the percentage of cement is between 15 and 30 percent; the percentage of water is between 5 and 30 percent; and the percentage of pigment is between 0 and 10 percent.

13. The process of claim 10, wherein the resulting product brick measures 2.25" x 3.625" x 7.625" and weighs 1980 grams having a density of 120 pounds per cu. ft.

14. The process of claim 10, wherein hydraulically powered computer-controlled servo valves enable cycle times of between 5 and 20 seconds, the ambient self curing of the product bricks is between seven and twelve hours, and the turnaround time of the process is less than twelve hours between mixing, molding, racking, and final palletizing.

15. The process of claim 13, wherein the cycle times are approximately 10 seconds, the self curing is approximately eight hours, and the turnaround time is just over eight hours.

16. A process for making brick and brick paver, consisting of the steps of:

(a) delivering a ratioed mass weight of each of sand, cement, water, and pigment per unit time from raw material accepting portions to raw materials supplying portions to a mixing portion of a molding apparatus;

(b) mixing said sand, cement, water, and pigment in the mixing portion and delivering the resulting mixture via a delivery portion where additional continuous mixing of the mix takes place to a molding portion having a supporting portion and an indexing portion; and

(c) molding said mixture with compression along one axis, in both positive and negative directions thereof, said raw material supplying portion comprising a feed chute;

said mixing portion comprising an elongated chamber and means for mixing; said delivery
5 portion comprising a charge chamber, and said molding portion comprising a chamber formed by a supporting portion and faces of two opposed ram assemblies having a face at one end and a cylinder assembly generating advancing and retracting movement at the other end; the frame having an indexing plate, a pair of reciprocal ram heads, each driven by a separate dual-action hydraulic cylinder having an internal piston, and a charge chamber having a flat bottom and
10 fed by a feed chute; said pair of ram heads comprising a front ram and a rear ram that move in concert along the flat bottom of said charge chamber, thereby causing the measurement of the correct amount of charge and its positioning into a mold chamber formed by the selective alignment of said ram heads, said flat bottom of said feed chute, and said frame; said rear ram having a solid flat upper surface for sealing off additional charge in said feed chute; said front
15 and rear rams being selectively moveable and stoppable at the right side of said mold chamber, and reversible to appropriate distances and across said indexing plate to home positions, for compressing said charge into an appropriately sized brick or paver, pushing said brick onto said indexing plate, immediately retracting into said mold chamber, and pausing to allow indexing plate to index and receive another brick, and further retracting to its starting
20 position, wherein the moisture content in the mix is from approximately 10% to 30% of sample volume and 8.5% to 10.5% of sample weight and no steam curing or firing is required after formation of the brick in order for the brick to meet or exceed ASTM and building code requirements for fired clay face brick.

17. The process of claim 15, wherein the percentage of sand in the total mix is between 50 and 75 percent; the percentage of cement is between 15 and 30 percent; the percentage of water is between 5 and 30 percent; and the percentage of pigment is between 0 and 10 percent.

5 18. The process of claim 15, wherein the resulting product brick measures 2.25" x 3.625" x 7.625" and weighs 1980 grams having a density of 120 pounds per cu. ft.

19. The process of claim 15, wherein hydraulically powered computer-controlled servo valves enable cycle times of between 5 and 20 seconds, the ambient self curing of the product bricks is between seven and twelve hours, and the turnaround time of the process is
10 less than twelve hours between mixing, molding, racking, and final palletizing.

20. The process of claim 18, wherein the cycle times are approximately 10 seconds, the self curing is approximately eight hours, and the turnaround time is just over eight hours.